though since then has not the "Thoroughbred Horse" been written by Prof. Ridgeway?

The majority of the other essays are, however, worth issuing in collected form. In reading them we recognise the spirit of the genuine sportsman naturalist—the best combination in a human being for the full enjoyment of the external world—and follow with deep satisfaction his excellent companionship out into the open in his "Marsh Walk in May," "On the Hill," and "Bird Life on the Broads." An interesting chapter on "Small Birds on Migration carried by Large Ones" leaves the question as undecided as before. It may be worth recording, however, that many years ago the present writer listened with intense interest to his *vis-à-vis*, at a Lisbon hotel *table d'hôte*, relating how he had seen in Egypt small birds landing from the shoulders of an immigrant crane. The writer on inquiry learned that the name of his co-resident was "von Heuglin."

In his essay on the "Fascination of Light," Mr. Harting records some circumstantial evidence for believing that the powder-down patches of certain herons are phosphorescent, and probably provide a "living-light" for alluring fishes to the surface of the water, and within sight of the foraging bird during the darkness. It is suggested also in regard to the common kingfisher that its orange-coloured breast may serve the same purpose when the bird is hovering (during daylight) over water "on the feed." While it would be very difficult to prove the latter suggestion experimentally, it seems that the former might be investigated with much chance of success by a couple of unprejudiced, enthusiastic and properly equipped ornithologists spending a few dark nights in a punt in the quiet haunts of the heron.

These "Recreations" may be cordially recommended to the lover of nature as a companion on his summer holidays. The book is full of delightful illustrations—those especially by Joseph Wolf and George Lodge—and, as a specimen, the beautiful hovering kingfisher, by the latter artist, is reproduced here.

F.

FORTHCOMING VISIT OF REPRESENTATIVES OF UNIVERSITY EDUCATION IN FRANCE.

THE Senate of the University of London has invited representatives of the University of Paris (Faculty of Letters and Faculty of Sciences) and of the Collège de France to visit London at Whitsuntide. These representatives will be accompanied by the highest officials of the French Ministry of Public Instruction and by a number of representatives of the French provincial Universities. The Société des Professeurs de Langues vivantes and of the Guilde Internationale will be simultaneously entertained by the Modern Language Association, and the University has arranged for the representation of all these bodies at the various ceremonies. The French delegations will be headed by M. Liard, the Vice-Rector of the University of Paris.

The King has graciously expressed his desire to receive a number of the French visitors at Windsor on Thursday afternoon, June 7.

The general programme will include the following items:—Monday, June 4, an informal dinner at the Royal Palace Hotel, Kensington, at which the guests of the University will stay. Tuesday, June 5, a reception at the Foreign Office by Lord Fitzmaurice and by Mr. Lough, Parliamentary Secretary of the Board of Education, at noon; luncheon at the University; addresses at the University by Sir Edward Busk, Vice-Chancellor, M. Liard, Sir Arthur Rücker, and Prof. Sadler (on behalf of the Modern Language Association); informal receptions of French and English specialists. Wednesday, June 6, visits to Westminster Abbey, to Westminster School, and to some of the London County Council educational institutions, followed by a luncheon to be given by Mr. Evan Spicer, chairman of the County Council, at Belair, Dulwich; in the evening a dinner at University College, and various private dinners, followed by a reception by his Excellency the French Ambassador at the French Embassy. Thursday, June 7, addresses by the Deans of the Faculties of Arts and Science of the Universities of London and Paris, by Sir William Ramsay, K.C.B., and by representatives of the Collège de France, the French provincial Universities, and the French Modern Language Association; and in the evening a conversazione at the University. It is understood that a number of the French guests will, on Friday, June 8, visit the Universities of Oxford and Cambridge.

The guests will include the following representatives of science in France:—

University of Paris: M. Liard, Vice-Recteur de l'Université; Profs. Appell, G. Bertrand, Léon Bertrand, Vidal de la Blache, Borel, Boutroux, Bouty, Bouveault, Dastre, Delage, Fernbach, Hérouard, Houssay, Joannis, Lapicque, Leduc, Lippmann, Matignon, Matruchot, Painlevé, Pellat, Perrin, Pruvot, and Puiseux.

Collège de France: Profs. Henneguy and Pierre Janet.
University of Bordeaux: Prof. Lorin.
University of Caen: Prof. Guinchant.
University of Lille: Prof. Ponsot.
University of Nancy: Prof. Cuénot.

NOTES.

GREAT surprise and regret have been caused in German chemical circles by the announcement that Prof. W. Ostwald has requested the Saxony Minister of Education to allow him to give up the position which he has held in the University of Leipzig for so many years. German scientific journals and papers are unanimous in saying that of living chemists not one has exercised so great an influence on the progress of modern chemistry as Prof. Ostwald in his almost twenty years of academic teaching. But Prof. Ostwald finds the direction of a large university laboratory making so many calls on his time as to prevent his carrying out the amount of original and private work which he would like, with the result that he has decided to retire to his country house at Grossbothen (Saxony), where a small private laboratory has been arranged, and devote himself to literary and experimental work, dealing in the first instance with the technology of painting.

AT the invitation of the Anglo-German Friendship Committee a number of editors of German newspapers will visit London shortly. According to present arrangements, the visitors will arrive in London on June 20. Among the many entertainments provided is a visit to the Natural History Museum on Sunday, June 24, under the guidance of Lord Avebury and Prof. Ray Lankester. On Wednesday, June 27, the party will go to Cambridge to be entertained at one of the colleges and taken over the University.

THE President of the Board of Trade has appointed Major P. A. MacMahon, F.R.S., to be Deputy Warden of the Standards, to succeed the late superintendent of weights and measures, Mr. H. J. Chaney.

THE Friday evening discourse at the Royal Institution on June 1 will be delivered by Prof. H. Moissan, on "L'Ébullition des Métaux," and on June 8 by Sir James Dewar, on "Studies on Charcoal and Liquid Air."

THE anniversary meeting of the Royal Geographical Society was held on Monday, May 21, when the medals and other awards announced in NATURE of April 5 (p. 541) were presented.

A FEATURE of the "Country in Town" Exhibition which will be held on July 5–19 in the Whitechapel Art Gallery will be photographs illustrating what can be done to beautify urban gardens, streets, and parks. Photographic prints for the exhibition will be gladly received by the honorary secretary, Mr. Wilfred Mark Webb, at Toynbee Hall, Whitechapel, E.

THE death of Mr. Charles Eugene De Rance occurred on May 9, after eleven days' illness, the result of an unfortunate accident. Although Mr. De Rance began and ended his professional career as a civil engineer, he was for thirty years an officer of the Geological Survey of England and Wales. During this period he was engaged in the south of England and upon the Coal-measures of Flintshire and elsewhere, but most of his work was among the Triassic rocks of Lancashire and Cheshire, and the Glacial deposits of the same districts. He contributed to several memoirs of the Geological Survey, but his principal published work was the "Water Supply of England and Wales" (1882). For sixteen years he acted as secretary of a committee of the British Association on the circulation of underground waters; he was associated also with a committee on coast erosion. Problems of water supply always enlisted his attention; one of his last acts was an appeal for information as to the influence of the recent earthquakes on the flow of water in wells.

WE notice with regret the announcement of the death on May 1 of Prof. I. C. Russell, head of the Department of Geology at the University of Michigan. He was for a short time assistant professor of geology at Columbia University, and became geologist in the U.S. Geological Survey in 1880. In 1892 he became professor of geology in the University of Michigan. Prof. Russell was vice-president of the American Association in 1904, and was president of the American Geological Association at the time of his death.

MESSRS. C. VENKATARAMAN AND V. APPARAN, of the Presidency College, Madras, write to describe a modification of Melde's experiment with a weighted string attached to the prong of a tuning-fork. When the string to which the pulley is attached is held so as to be neither parallel nor perpendicular to the vibration of the tuning-fork, then, if the tension is properly adjusted, the string takes up a stationary form of vibration capable of simple explanation.

REFERRING to the correspondence on "Sounding Stones" published in our issue for January 4 (vol. lxxii., p. 222), Mr. E. M. Buchanan, writing from Henzada, Burma, directs attention to the resonant properties of fossilised wood and a long established custom in Upper Burma, where such wood is common. The natives collect pieces of a kind with even grain, obtainable in lengths of 4 feet to 6 feet, and convert them into gongs by polishing them slightly. In the monasteries or shrines the monks accompany their recitations at matins and vespers with the music of their stone gongs, which are usually well attuned and give a pleasing effect.

WE learn from the *Times* that the Government has given its sanction to a scheme for the organisation of the Archæological Department of India on a permanent and improved footing. Although much has been done since a Director-General of Archæology was appointed in 1902 for a period of five years, the experience gained has proved that the task of restoring and conserving the antiquities of India will always require trained ability for its adequate discharge. The present Director-General of Archæology is confirmed in his appointment. In lieu of the present Government epigraphist for Madras, the scheme provides for the appointment of a Government epigraphist for the whole of India, whose duty it will be to organise and collate the results of the epigraphical work of the provincial surveys. At the same time, the importance of Madras for this form of research and its special linguistic conditions necessitate the retention of a special epigraphical expert in that presidency.

THE chief annual meeting of the Verein Deutscher Chemiker will be held this year at Nurnberg on June 6–9. Prof. C. Duisberg, of Elberfeld, will report on the work of the commission appointed by the Gesellschaft Deutscher Naturforscher und Aertze to consider the science teaching in German schools; Herr A. von Baeyer will lecture on the anilin dyes; Dr. Lehner, of Zürich, on artificial silk; Prof. Stockmeier, of Nurnberg, on explosions in the aluminium bronze colour industries; Prof. F. Haber, of Karlsruhe, on the optical analysis of coal gas; Prof. A. Werner, of Zürich, on valency; Dr. F. Raschig, of Ludwigshafen, on catalysis; Prof. M. Busch, of Erlangen, on new methods of determining the amount of nitrogen in nitrocellulose; Dr. Ed. Jordis, of Erlangen, on the chemistry of silicates; Dr. L. Eger, of Munich, on the examination and evaluation of railway materials; Dr. O. Röhm, on the manufacture of illuminating gas; and Dr. M. Neumann, of Cronberg, on the theory of the Glover process and the manufacture of sulphuric acid in towers. Visits will be paid to several chemical works and large engineering works in the neighbourhood, including Messrs. Siemens and Schuckert's, while excursions to Erlangen on June 8, to Rothenburg a.T. (Württemberg) on June 10, and to the Jubilee exhibition on June 9 are to be arranged.

THE Connecticut Agricultural College has been authorised to accept the Edwin Gilbert bequest consisting of a farm of 350 acres at Georgetown, Conn., together with a fund of 12,000*l*. for the maintenance of the farm. The tract of land is, according to *Science*, to be used for experimental purposes in connection with the work of the agricultural college, but it is not intended to establish a branch of the college at Georgetown. From the same source we learn that the additional appropriation of 1000*l*. for the agricultural experiment stations, provided by the Adams Bill, has now been paid. This Bill increased the present appropriation of the agricultural stations under the Hatch and Morrill Acts by 1000*l*. for the year ending next June, and by an additional 400*l*. annually above the amount of the preceding year for the next five years. At the end of the five years this will amount to an increase of 3000*l*., bringing the total appropriation to each experiment station to 6000*l*. annually. The funds are to be applied only to original researches or experiments bearing directly on the agricultural industry of the United States, with due regard to the varying conditions and needs of the States in which the stations are located.

THE contents of the May number of *Naturen* include articles on mosquitoes and gnats, on the Yangtse-kiang district and its products, and on dogs—prehistoric and modern—the last of these being by Dr. Reinhardt.

OWING to the advent of abnormally high temperatures at an unusually early period, which rendered collecting in the desert practically impossible, Dr. C. W. Andrews, of the Natural History Museum, has returned from his Egyptian trip. We understand that he has obtained some important specimens from the Fayum deposit, but that he was unable to visit the zeuglodon-beds of the Mokattum range.

THE greater portion of the April issue of the *Museums Journal* is taken up by an illustrated article by Colonel Plunkett, director of the Dublin Museum, on the methods employed at that institution in circulating objects of art, or reproductions therefrom, among schools and other local establishments. A special endeavour has been made to reduce so far as possible the labour and expense connected with handling, packing, receiving, and dispatching the circulation sets, and although the scheme has only been in operation for a couple of years, it appears to be a conspicuous success.

AN important paper by Mr. F. W. Thyng appears in the Proceedings of the Boston Society of Natural History (vol. xxxii., No. 11) on the squamosal bone of the skull in four-footed vertebrates. After maintaining, in opposition to the views of Gadow, Broom, and others, that the mammalian incus corresponds to the reptilian quadrate, the author proceeds to demonstrate that, of the two bones lying between the parietal and the quadrato-jugal in the labyrinthodont skull, the lower one, as not overlying the otic capsule, represents the squamosal of mammals, while the upper one should be called the supratemporal. According to the generally accepted scheme of cranial osteology, these names are transposed. The author's re-determination is largely based on the evidence afforded by the larval skull of the limbless amphibians, or cæcilians, which appear to come the nearest of all living groups to the labyrinthodonts.

THE articles in the combined second and third parts of vol. lxxxi. of the *Zeitschrift für wissenschaftliche Zoologie* are only three in number, but each is of unusual length. In the first Mr. Hans Dunker discusses the homology of the cirri and the elytra in the "sea-mouse" (Aphrodite); the second is a continuation of Dr. L. Böhmig's studies of the planarian worms of the Tricladida group; while the third, by Mr. C. von Janicki, of Basle, is devoted to certain new or little-known cestode parasites infesting marsupials, bats, insectivores, rodents, and edentates. In the case of the last paper, especial interest, from a geographical point of view, attaches to the discovery in a Brazilian opossum of a new species of tape-worm belonging to the genus Linstowia, which was established by Zschokke in 1898 for the species *L. semoni* infesting one of the Australian bandicoots, but included another species found in the Echidna or spiny anteater of the same region. The new evidence is of the highest importance in confirming the opinion as to the close affinity of the South American to the Australasian marsupials, and also as to the relatively late date at which the two groups were sundered. Whether the common habitat of the ancestral type was, as has been suggested, in south-eastern Asia or in a sunken southern land remains to be determined.

SOME cultural notes by Mr. H. Drion on hardy bamboos, continued from the previous number, are published in the April number of *Le Bambou.* Prof. E. de Wildeman contributes a note on the bamboo-hat industry in Java, that gives employment to a large number of natives. The hats are made double and in various qualities depending upon the degree of fineness of the woven strips. Their cost varies from four pence to eighteen pence; the chief defect is their tendency to become discoloured.

THE Para rubber tree and its cultivation, also the cultivation of other American rubber trees, have attracted a great deal of attention lately, but *Ficus elastica*, the source of india-rubber, is seldom mentioned, and its cultivation is by no means fully understood. A small brochure written by Mr. C. Bald contains much information on the subject that will be useful to rubber planters in the north of India and elsewhere. Wild plants generally begin life as epiphytes, but the writer describes how seedlings can be readily germinated and transplanted, or a branch may be specially prepared for layering, whereas artificial attempts at epiphytic germination have mostly failed.

THE third number of the Kew Bulletin for this year contains a series of identifications of new plants by workers in the herbarium. Dr. Stapf contributes a decade of African plants and a selection from various countries, including four species of Icacineæ from Borneo. Among the new orchids named by Mr. Rolfe are a Catasetum from Colombia and a Pteroglossaspis that is interesting as the first American record of a genus hitherto known only from Africa. Mr. G. Massee concludes an account of animal and plant parasites destructive to beets and mangolds by pointing out the risk of growing two root crops in succession.

IN the Bulletin of the Department of Agriculture, Jamaica, vol. iv., part iii., an article by Mr. H. Q. Levy is published on the cultivation and marketing of oranges and grape fruit. Mr. Levy treats the subject from the point of view of the small grower, and gives advice on the laying out of the plantation, suitable catch crops, and the diseases of citrus fruits; the varieties of orange recommended are the seedless Petersfield navel and the seeded Pineapple. The hints on grading and packing the fruit are pertinent and practical. The part also contains a list compiled by Mr. Wm. Harris of the seasons and prices in Kingston for fruits, vegetables, and other products.

MR. E. P. STEBBING writes a short note in the *Indian Forester* (March) on *Termes gestroi*, a termite that attacks Para rubber trees. This parasite has been reported previously from Borneo, Singapore, and the Straits Settlements, and now from the Mergui plantations in Burma. Little appears to be known of the habits of these white ants except that they hollow out their galleries in the crown of the root, where they collect and store the latex, and that they have increased greatly owing to the favourable conditions they find in the plantations of this exotic tree. Further information with regard to their life-history is required before satisfactory methods of treatment can be suggested.

ALTHOUGH an exhaustive investigation into the methods of cultivating and manufacturing natural indigo in India was carried out by Mr. Rawson a few years ago, and valuable suggestions were made by him for effecting improvements, the importance of the subject warranted further experiments that have been undertaken by Mr. C. Bergtheil, the agricultural bacteriologist to the Government of India. In the recent report of the Indigo Research Station at Sirsiah the superiority of the Natal plant, *Indigofera arrecta*, as improved by cultivation in Java, over the ordinary Bengal plant, *Indigofera sumatrana*, is clearly established, except under certain conditions. Mr. Bergtheil also emphasises the importance of seed selection. In the manufacturing processes the chief point inculcated is the necessity for maintaining the steeping vats at a temperature of 90° F.

Mr. E. R. Pratt, of Ryston Hall, Norfolk, writes an interesting article on the East Anglian timber willow in the recently published Journal of the Royal Agricultural Society. The supply of timber suitable for their trade has in recent years caused manufacturers of cricket-bats some anxiety. In East Anglia, and apparently in other parts of England, all large willows have been felled, except those kept by landowners for ornamental purposes, and the price of timber good enough for bat-making has risen to 5*s*. per foot. Two varieties of willow are purchased, the "close-bark," which is considered much the best, and the "open-bark." Growers of willows have found it a difficult matter to ascertain what variety the bat-maker wants, as his descriptions of the tree have been very vague. Mr. Pratt has gone carefully into the question of variety, and has examined a great many willows in the eastern counties. On the authority of a botanist who has given special attention to the genus (Rev. E. F. Linton, of Edmondsham, Salisbury), he states that the "close-bark willow" is not *Salix alba*, but *S. viridis*, a variable hybrid between *S. alba* and *S. fragilis*. Many of Mr. Pratt's specimens closely approached the former species, but could always be distinguished by the bronze-red winter shoots. He believes that the genuine *S. alba*, of which he has cultivated specimens obtained from Kew, is very rare in the eastern counties. Mr. Pratt further states that the "open-bark willow" of the bat-maker is *S. fragilis*, the crack willow, or its variety, *S. Russelliana*, the Bedford willow. In his experience *S. viridis* is much more common in East Anglia than *S. fragilis*.

In the *Engineering Review* (vol. xiv., No. 5) illustrations are given of the works at Notodden where the synthesis of nitrates from the air has been found commercially practicable.

Some very useful hints for horseback travel and transport are given in an article by Mr. F. L. Waldo on outfitting for the prospecting trail in northern Mexico in the *Engineering Magazine* (vol. xxxi., No. 1). During a ten years' residence in Mexico the author's attention has many times been directed to the incongruity of the outfits prepared and brought into that country by those whose business or pleasure call them into the Sierras. While the suggestions given refer specifically to a certain region, many of them will be of value elsewhere.

A Bulletin (vol. iii., No. 54) has been issued by the Department of Agriculture, Madras, describing experiments on well irrigation made by Prof. A. Chatterton at Metrosapuram in 1902–5. The results show that with adequate pumping power it is possible to improve the water supply and to cultivate a very considerable tract of land from a single well. If in the future oil engines and pumps are extensively used for well irrigation in India, it appears certain that the 3-inch centrifugal pump will be most largely employed, and that such a pump will water six acres per day of twelve hours, and will be suitable for areas ranging from thirty to fifty acres.

The annual progress report of the Geological Survey of Western Australia for 1905 (Perth, 1906) shows that much valuable work has been done. The Wodgina tinfield has been carefully examined, and it is believed that it will prove an important tin and tantalite producer. About 1 cwt. of tantalite specimens have been presented to the Survey museum. During the year there was a sudden demand for tantalum ores which had hitherto been considered useless. Considerable interest has been taken locally in deposits of graphite, and those on the Donnelly River have been worked to a slight extent. A sample of laterite iron ore from Comet Vale, North Coolgardie, proved of great interest on account of the occurrence in it of a notable proportion of chromium, mostly in the form of a hydrate. A large portion of the report is devoted to the results of examinations of the various goldfields, full reports of which will be published in due course.

The weather report of the Meteorological Office for the week ending Saturday, May 19, shows that the recent rains were excessive in places, while in other parts of the United Kingdom the rainfall was below the average. In the east of Scotland and in the north-east of England the aggregate fall was at least four times the average. The measurements due to the exceptionally heavy rains of Saturday, May 19, were:—2·53 inches at North Shields, 2·40 inches at Alnwick Castle, and 2·23 inches at Seaham. Both France and the Spanish Peninsula participated in the heavy rains of Saturday, the measurement for the twenty-four hours at Lyons being 2·25 inches, and at Corunna 2·40 inches.

We have received copies of the *Boletim mensal* of the Observatory of Rio de Janeiro, issued under the auspices of the Ministry of Industry. Anyone wishing to study the climate of that part of the Atlantic shore lying between the mouth of the Amazons and Rio de Janeiro will find trustworthy statistics for several of the coastal stations. The data are chiefly for ten-day means, with monthly means and extremes, but for Rio de Janeiro the actual observations for three-hourly periods are given in addition, and furnish most valuable details for all meteorological elements.

The Republic of Uruguay has recently established a National Institute for Weather Prediction, with its central observatory at Monte Video; the meteorological observatory at that place was founded by the municipal authorities in 1895. Observations have been made at several stations for some years, and the new institution has commenced its operations by the collation and discussion of the means and extremes already available, and by the investigation of the characteristics of the severe storms which affect the navigation of the estuary of the Rio de La Plata. The most dangerous storms are those from the south-east, as they usually occur with a rising barometer, in connection with anticyclonic conditions over the Atlantic, and are frequently accompanied by thick fog on the coast. The first number of the bulletin of the institute contains an exposition of the hydrography of the estuary, and tables showing, *inter alia*, the effect of the various winds upon the tides of the river.

Two reports have recently been issued on rates of deck watches and of box and pocket chronometers on trial for purchase by the Board of Admiralty at the Royal Observatory, Greenwich, in the latter half of last year. The number of deck watches on trial from August 5 to November 25, 1905, was 125, and the makers of the first five in the list, in which the watches are arranged in order of merit, are:—(1) W. Potts and Son, Leeds; (2) L. Hall, Louth, Lincs; (3) S. D. Neill, Belfast; (4) and (5) J. Player and Son, Coventry. The makers of the first five box chronometers of those on trial from June 17, 1905, to January 6, 1906, are:—(1) Kullberg, London; (2) and (3) Johannsen, London; (4) Lilley and Son, London; (5) M. F. Dent, London. In the same period the makers of the leading five pocket chronometers are:—(1) Newsome and Co., Coventry; (2) and (3) Kullberg, London; (4) Lindqvist, London; (5) Newsome and Co., Coventry.

PROF. B. WALTER states in a brief note published in the *Annalen der Physik* (vol. xix., p. 874) that the ultra-violet portion of the spectrum of a high-tension arc in air shows a series of bands identical with those observed by Eder in 1892 as characterising the combustion of ammonia, and considered by him as ammonia bands. It would appear probable that these bands are to be attributed rather to an oxide of nitrogen, produced in both cases, than to the cause suggested by Eder.

SOME successful attempts, made in the geophysical laboratory of the Carnegie Institution, to prepare small plates of quartz glass suitable for the construction of lenses, mirrors, or other optical apparatus, are described by Messrs. Arthur L. Day and E. S. Shepherd in *Science* (vol. xxiii., No. 591). The glass obtained was nearly free from air bubbles, and was only slightly discoloured by the presence of silicon. The conditions for obtaining such a material by the fusion, in a small graphite box, of pure crystallised quartz or tridymite, are summarised as follows:—an initial temperature of 2000° or more without pressure, so as to allow of the production of sufficient vapour to drive out the air between the grains, followed by pressure (at least 500 lb.) and a reduced temperature of about 1800°, with time for the quartz to flow compactly together without being attacked by the graphite.

AN interesting contribution to the study of fluorescence is contained in a paper published by Mr. Harry W. Morse in the Proceedings of the American Academy of Arts and Sciences (vol. xli., No. 27) under the title "Studies of Fluorite." The fluorescence and thermoluminescence of fluorite and the nature of the gaseous and liquid inclusions in fluorspar are dealt with under different headings. The fluorescence spectra shown by fluorite when excited by the light of the condensed electric spark between electrodes of certain metals contain sharp lines and narrow bands; the lines of these fluorescence spectra do not appear to belong to any known substance, and are remarkable inasmuch as different lines are obtained with different exciting sources. The spectrum also varies sharply from crystal to crystal with the same means of excitement. The cause of fluorescence, whatever be its nature, is removed or destroyed by heating at a temperature of about 300° C. At the same temperature the colouring matter of the different varieties of fluorite is destroyed; the nature of this colouring matter is discussed by reference to the gaseous products liberated at higher temperatures. As these consist of hydrogen, carbon monoxide, and carbon dioxide, the colouring matter would appear to be organic in its origin; the gases are probably produced by its undergoing a process of destructive distillation

No. 3, vol. xxiii., of the *Astrophysical Journal* contains an important paper by Mr. Theodore Lyman on the extreme ultra-violet spectrum of hydrogen. Part of this spectrum was previously photographed and investigated by Dr. Schumann, whose work was briefly described in vol. lxix. (p. 262) of NATURE. Unfortunately Dr. Schumann, although he photographed the spectrum down to λ 1270, was unable to give the wave-lengths beyond λ 1850, but this omission has now been rectified by Mr. Lyman, who has not only determined the missing wave-lengths, but has also extended the known spectrum down to λ 1030 (see NATURE, p. 465, vol. lxix., and p. 110, vol. lxx.). In the present paper the author describes the apparatus and methods employed in great detail, "in the hope that an exact knowledge of the conditions necessary to success may prove of value to investigators who work in this field"; he also gives reproductions of his spectrograms, with wave-length scales, for the region between λ 1670 and λ 1270.

THE Watkins Meter Co., Hereford, has published a third edition of "The Watkins Manual of Exposure and Development," by Mr. Alfred Watkins.

THE report for the year 1905 of the council of the Hampstead Scientific Society has been received. The Christmas juvenile lectures, and those on nature-study, intended to encourage the teaching of this subject to children, proved very successful. Among lectures delivered at the general meetings of the society may be mentioned those by Prof. Marcus Hartog, on the end and beginning of individuality as shown in the living cell; Dr. R. S. Clay, on the peculiarities and paradoxes of fluid pressure; Sir Samuel Wilks, F.R.S., on spirals; Dr. C. W. Andrews, F.R.S., on fossil hunting in the Libyan Desert; and Mr. F. W. Rudler, on the geology and scenery of the British Isles.

THE seventy-second annual report of Bootham School (York) Natural History, Literary, and Polytechnic Society shows that the pupils of this school continue to receive every encouragement to devote their leisure hours to the outdoor study of natural phenomena. During 1905 the boys were particularly successful in discovering rare plants, and though we have been unable to find a specific caution in the report, we trust that all observers are urged not to uproot plants or in any other way to assist the disappearance of rare species. It is satisfactory to find that attention is given to many branches of natural science so that the predilections of as many boys as possible may be satisfied.

OUR ASTRONOMICAL COLUMN.

SPECTRUM OF NOVA AQUILÆ NO. 2.—A visual observation of the spectrum of Nova Aquilæ No. 2, made at the Lick Observatory on September 5, 1905, showed a number of bands, the brightest of which was recognised as Hβ. Hγ and a band near λ 4600 were distinguished with difficulty owing to their extreme faintness.

Photographs obtained with the one-prism spectrograph on September 6 and 10 (exposures three and four hours respectively) confirmed the visual observation, the intensities of the bands at λ 4600 and Hγ being respectively one-fifth and one-tenth that of Hβ. Hδ was also seen, but was very faint.

A faint continuous spectrum was seen to extend from about λ 4500 to the region of the Hγ band. Hε and the so-called nebular lines were not visible.

Visual and photographic observations made on October 11, 1905, agreed in showing a marked diminution in the brightness of Hβ, which was then no brighter than Hγ (*Astrophysical Journal*, vol. xxiii., No. 3).

A number of magnitude observations of this Nova, made on various dates between September 20 and November 24 at the Utrecht Observatory, are recorded in No. 4089 of the *Astronomische Nachrichten* by Dr. A. A. Nijland.

STEREO-COMPARATOR DISCOVERIES OF PROPER MOTIONS.—At a meeting of the Paris Academy of Sciences, held on May 7, Prof. Loewy announced that Prof. Max Wolf had met with considerable success in discovering and measuring stellar proper motions by means of his stereo-comparator.

In one instance a star of known proper motion was seen to be obviously displaced after the very short interval of four years. When the two photographs, taken at this interval, were placed in the stereoscope, the star in question was seen to stand out in a plane considerably different from that in which the neighbouring stars appeared to be set.

Prof. Wolf has also been able to show that a ninth-magnitude star in the constellation Leo has a proper